WHAT IS CLAIMED IS:

1. An isolated chimpanzee nucleic acid sequence selected from the group consisting of:

a) SEQ ID NO: 1

b) SEQ ID NO: 2; and

c) a nucleic acid sequence complementary to the sequence of (a) or (b).

2. An isolated recombinant chimpanzee serotype comprising any combination of hexon and fiber nucleic acid sequences selected from the groups of:

a) a hexon gene sequence selected from the group consisting of SEQ ID NOS: 16-25, 41, 43, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, and 117; and

b) a fiber gene sequence selected from the group consisting of SEQ ID NOS: 6-15, 42, 44, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76 and 78.

3. An isolated recombinant chimpanzee serotype comprising any combination of hexon and fiber nucleic acid sequences derived from an adeonovirus selected from the group of isolates consisting of ECACC accession numbers 03121201 (ChAd4), 03121202 (ChAd5), 03121203 (ChAd7), 03121204 (ChAd9), 03121205 (ChAd10), 03121206 (ChAd11), 03121207 (ChAd16), 03121208 (ChAd17), 03121209 (ChAd19) and 03121210 (ChAd20).

4. A replication defective chimpanzee adenoviral (ChAd) vector comprising a nucleotide sequence derived from an adeonovirus selected from the group of isolates consisting of ECACC accession numbers 03121201 (ChAd4), 03121202 (ChAd5), 03121203 (ChAd7), 03121204 (ChAd9), 03121205 (ChAd10), 03121206 (ChAd11), 03121207 (ChAd16), 03121208 (ChAd17), 03121209 (ChAd19) and 03121210 (ChAd20) and a transgene which encodes at least one immunogen operatively linked to regulatory sequences which direct expression of said transgene in mammalian cells, wherein said vector lacks the nucleotide which comprises at least one adenoviral gene selected from the group consisting of adenoviral E1, E2, E3, and E4.

5. A replication defective chimpanzee adenoviral (ChAd) vector comprising the nucleotide sequence set forth in SEQ ID NO: 1 or SEQ ID NO: 2 and a transgene which encodes at least one immunogen operatively linked to regulatory sequences which direct expression of said transgene in mammalian cells, wherein said vector lacks the nucleotide sequence of SEQ ID NO:1 or SEQ ID NO:2 which comprises at least one gene selected from the group consisting of adenoviral E1, E2, E3, and E4.

6. A replication defective ChAd vector which comprises a deletion/disruption in the E1 nucleotide sequence in the region from bp 460 to bp 3542 of SEQ ID NO: 1 or from bp 457 to bp 3425 of SEQ ID NO:2.

7. The ChAd vector according to claim 6 wherein the vector comprises a transgene selected from the group consisting of: HIV, HBV, HCV, HPV, HSV1, HSV2, SARS CoV, *Plasmodium malariae*, Ebola virus, West Nile virus, Dengue virus, Influenza A, Influenza B, and *Mycobacterium tubercolosis.*

8. The ChAd vector according to claim 6 wherein the vector comprises a deletion/disruption in the E1 nucleotide sequence in the region from bp 460 to bp 3542 of SEQ ID NO: 1 or from bp 457 to bp 3425 of SEQ ID NO: 2 and further wherein the vector comprises a transgene encoding at least one tumor associated antigen (TAA).

9. The ChAd vector according to claim 8 wherein the at least one TAA is selected from the group consisting of: HER2 NEU, CEA, EPCAM, PSA, PSMA, TELOMERASE, GP100, MELAN-A/MART-1, MUC-1, NY-ESO-1, SURVIVIN, STROMELYSIN 3, TYROSINASE, MAGE3, CML68, CML66, OY-TES-1, SSX-2, SART-1, SART-2, SART-3, NY-CO-58, NY-BR-62, HKLP2, 5T4 and VEGFR2.

10. A host cell comprising a nucleic acid molecule according to claim 1 or claim 2 wherein said host cell expresses one or more adenoviral regions selected from the group consisting of E1a, E1b, E2a, E2b, E4 orfs 1, 2, 3, 4, 5, 6, 6/7, pIX, IVa2, regions L1, L2, L3, L4, L5.

11. A method of producing a replication-defective chimpanzee adenoviral vector comprising introducing an adenoviral vector according to Claim 5 into an adenoviral E-1 expressing human cell, and harvesting the resulting adenoviruses.

12. The method according to Claim 11 wherein the human cell is a 293 cell or a PER.C6™ cell.

13. A vaccine composition comprising a replication-defective ChAd vector according to any one of Claims 4-6.

14. An adenoviral E1-expressing human cell comprising the nucleotide sequence set forth in SEQ ID NO: 1.

15. An adenoviral E1-expressing human cell comprising the nucleotide sequence set forth in SEQ ID NO: 2.

16. A method of boosting an antigen-specific immune response in a mammal comprising administering to said mammal a sufficient amount of a recombinant ChAd vector comprising a chimpanzee adenovirus genome containing at least a functional deletion of its E1 gene, a nucleotide sequence encoding a target antigen and a promoter sequence capable of directing expression of the nucleotide sequence encoding the target antigen, wherein administration of said chAd vector elicits a boosted response.

17. The method of claim 16 wherein the ChAd vector comprises a complete deletion of its E1 genes and further wherein the vector optionally comprises a deletion of its E3 genes.

18. The method of claim 16 wherein the boosted immune response is specific for an antigen derived from an infectious agent selected from the group consisting of: HIV, HBV, HCV, HPV, HSV1, HSV2, SARS CoV, *Plasmodium malariae*, Ebola virus, West Nile virus, Dengue virus, Influenza A, Influenza B, and *Mycobacterium tubercolosis*.

19. The method of claim 16 wherein the immune response is a boosted immune response that is specific for a TAA.

20. The method of claim 19 wherein the boosted immune response comprises the production of antigen-specific CD8+ T cells.

21. The method of claim 16 wherein the boosted immune response comprises the production of antigen-specific CD8+ T cells.

22. A method of eliciting an immune response in a naïve mammal comprising administering to said mammal a sufficient amount of a ChAd vector which comprises a chimpanzee adenovirus genome containing at least a functional deletion of its E1 gene, a nucleotide encoding a target antigen and a promoter sequence capable of directing expression of the nucleotide sequence encoding the target antigen, wherein administration of the ChAd vector elicits a primary immune response.

23. The method of claim 22 wherein the primary immune response is specific for an antigen derived from an infectious agent such as, but not limited to HIV, HCV, HPV, HSV1, HSV2, SARS CoV, *Plasmodium malariae*, Ebola virus, West Nile virus, Dengue virus, Influenza A, Influenza B, *Mycobacterium tubercolosis*.

24. The method of claim 16 wherein the immune response is a primary immune response that is specific for a TAA against which the mammal is tolerant.

25. The method according to claim 16 wherein the recombinant adenovirus comprises a nucleotide sequence which encodes a hexon peptide consisting of an amino acid sequence selected from the group consisting of SEQ ID NOS: 87-96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 122 and 123.

26. A method according to any one of claim 16 wherein the recombinant adenovirus comprises a nucleotide sequence which encodes a fiber protein consisting of an amino acid sequence selected from the group consisting of SEQ ID NOS: 48-57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 83 and 84.

27. A method of inducing an immune response against an antigen derived from an infectious agent selected from the group consisting of: HIV, HCV, HPV, HSV1, HSV2, SARS, *Plasmodium maleriae*, Ebola virus, West Nile virus, Dengue virus, Influenza A, Influenza B, and *Mycobacterium tubercolosis* comprising the steps of:

(a) priming a host to respond to a infectious agent-antigen by administering a first vaccine composition comprising a nucleotide sequence encoding a infectious agent-antigen against which an antigen-specific immune response is desired; and

(b) boosting the immune response of step (a) by administering a second vaccine composition comprising a recombinant ChAd vector containing at least a functional deletion of its E1 gene, and in the site of the E1 gene deletion, a sequence comprising a promoter capable of directing expression of DNA encoding the same infectious agent–antigen delivered in the priming step;

wherein administration of the boosting composition elicits an immune response which has the effect of conferring protective immunity.

28. The method according to claim 27 wherein the first vaccine composition comprises plasmid DNA which is administered intramuscularly in combination with electrical stimulation.

29. The method of claim 27 wherein the second vaccine composition comprises a ChAd vector comprising DNA encoding an antigen derived from an infectious agent selected from the group consisting of: HIV, HCV, HPV, HSV1, HSV2, SARS, Malaria, Ebola virus, West Nile virus, Dengue virus, Influenza A, Influenza B, and *Mycobacterium tubercolosis*.

30. The method of Claim 27 wherein the immune response comprises the production of antigen-specific CD8+ T cells.

31. The method of claim 30 wherein the ChAd vector is derived from an adenovirus selected from the group consisting of ChAd3, ChAd6, ChAd20, ChAd4, ChAd5, ChAd7, ChAd9, ChAd10, ChAd11, ChAd16, ChAd17, ChAd19, ChAd8, ChAd22, ChAd24, ChAd26, ChAd30, ChAd31, ChAd37, ChAd38, ChAd44, ChAd63 and ChAd82.

32. The method of claim 30 wherein the ChAd vector comprises a nucleotide sequence which encodes a hexon peptide consisting of an amino acid sequence selected from the group consisting of SEQ ID NOS: 87-96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 122 and 123.

33. The method of claim 30 wherein the ChAd vector comprises a nucleotide sequence which encodes a fiber protein consisting of an amino acid sequence selected from the group consisting of SEQ ID NOS: 48-57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 83 and 84.

34. The method of claim 30 wherein the first and second vaccine compositions are ChAd vectors characterized by different serotypes.

35. A method of breaking host tolerance to a self-antigen comprising: (a) priming a host to respond to a self-antigen by administering a first vaccine composition comprising a nucleotide sequence encoding a self-antigen against which an antigen-specific immune response is desired, thereby eliciting a primed response; and (b) boosting the primed immune response of step (a) by administering a second vaccine composition comprising a recombinant ChAd vector containing at least a functional deletion of its E1 gene, and in the site of the E1 gene deletion, a sequence comprising a promoter capable of directing expression of DNA encoding the same self-antigen delivered in the priming step, wherein

administration of the boosting composition elicits an immune response which has the effect of breaking host tolerance to the self-antigen.

36. The method according to claim 35 wherein the first vaccine composition comprises plasmid DNA which is administered intramuscularly in combination with electrical stimulation.

37. The method of claim 35 wherein the second vaccine composition comprises a ChAd vector comprising DNA encoding a self antigen selected from the group consisting of: HER2 NEU, CEA, HEPCAM, PSA, PSMA, TELOMERASE, GP100, MELAN-A/MART-1, MUC-1, NY-ESO-1, SURVIVIN, STROMELYSIN 3, TYROSINASE, MAGE3, CML68, CML66, OY-TES-1, SSX-2, SART-1, SART-2, SART-3, NY-CO-58, NY-BR-62, HKLP2, 5T4 and VEGFR2.

38. The method of Claim 35 wherein the immune response comprises the production of antigen-specific CD8+ T cells.

39. The method of claim 35 wherein the ChAd vector is derived from an adenovirus selected from the group consisting of ChAd3, ChAd6, ChAd20, ChAd4, ChAd5, ChAd7, ChAd9, ChAd10, ChAd11, ChAd16, ChAd17, ChAd19, ChAd8, ChAd22, ChAd24, ChAd26, ChAd30, ChAd31, ChAd37, ChAd38, ChAd44, ChAd63 and ChAd82.

40. The method of claim 35 wherein the ChAd vector comprises a nucleotide sequence which encodes a hexon peptide consisting of an amino acid sequence selected from the group consisting of SEQ ID NOS: 87-96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 122 and 123.

41. The method of claim 35 wherein the ChAd vector comprises a nucleotide sequence which encodes a fiber peptide consisting of an amino acid sequence selected from the group consisting of SEQ ID NOS: 48-57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 83 and 84.

42. The method of claim 35 wherein the first and second vaccine compositions are both ChAd vectors characterized by different serotypes.